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## AI-Powered Public Finance Threat Intelligence & Procure-to-Pay Compliance System

### Hackathon Whitepaper (8 Pages)

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#### Page 1 — Executive Summary

**Title:** AI-Powered Public Finance Threat Intelligence & Procure-to-Pay Compliance System

**Overview:**

Governments lose millions annually due to procurement fraud, budget leakage, and delayed audits. Manual auditing is slow, error-prone, and reactive, leading to unmonitored risks.

Our solution introduces a **real-time AI-driven Public Finance Intelligence Platform** that:

- Monitors the entire Procure-to-Pay lifecycle
- Flags financial threats, ghost suppliers, and invoice fraud
- Enforces compliance with PFM and PPDA Acts automatically
- Generates audit-ready, real-time dashboards and reports

**Key Benefits:**

- Transparency across ministries, counties, and state corporations
- Proactive fraud detection and prevention
- Reduced audit cycle times
- Predictive analytics for budget discipline

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#### Page 2 — Problem Statement

**Challenges in Public Financial Management:**

- **Ghost suppliers & fake invoices** → millions lost unnoticed
- **Duplicate or unsupported payments** → financial leakage
- **Collusion in tendering** → unfair contract awards
- **Delayed audits & policy non-compliance** → low accountability

**Impact:**

- Wasted public funds
- Inefficient budgeting and planning
- Weak governance and reduced public trust

**Need:**

A **smart, AI-powered system** that protects public money, enforces compliance, and provides real-time actionable insights.

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**Page 3 — Proposed Solution**

**Our AI-Powered Solution:**

1. **AI Threat Intelligence Engine**  
Detects anomalies, ghost suppliers, and collusion patterns.
2. **GenAI Compliance Agent**  
Enforces PFM and PPDA regulations automatically, before approvals.
3. **Real-Time Dashboards & Reports**  
Audit summaries, supplier risk scorecards, and red-flag alerts.
4. **Workflow Automation**  
Supplier vetting, document extraction, compliance scoring, and risk classification.
5. **Predictive Analytics**  
Budget overrun prediction, contract inflation alerts, and potential corruption hotspots.

**Diagram Suggestion:** Procure-to-Pay lifecycle with AI & GenAI overlay

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**Page 4 — Features Overview**

Feature	Description
AI Fraud Detection	Detects ghost suppliers, fake invoices, abnormal spending, and collusion.
GenAI Compliance Agent	Automatic checks of PFM/PPDA policies, thresholds, and document validation.

Feature	Description
Auto Reports	Generates audit-ready summaries, compliance reports, deviation analysis.
Workflow Automation	Supplier verification, contract checks, compliance scoring, and alerts.
Predictive Analytics	Predicts high-risk procurement, budget overruns, and irregular expenditure.

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## Page 5 — Technology Stack & Architecture

**Frontend:** Next.js, Tailwind CSS, Framer Motion, GSAP

**Backend:** Hono.js (REST API, RBAC, Audit Logging)

**AI Layer:** JS/TS ML models, ONNX Runtime, TensorFlow.js, LangChain GenAI

**Database:** PostgreSQL, Supabase / PlanetScale

### Architecture Diagram (Suggestion):

Public Entity / IFMIS Data



Ingestion Layer



AI Threat Detection Engine



GenAI Compliance Agent



Dashboards & Reports

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## Page 6 — IFMIS Integration & Case Study

### IFMIS Integration:

- Secure API connection
- Enhances existing IFMIS capabilities

- Provides real-time alerts and compliance enforcement

#### Case Study — Ethiopia IFMIS:

- AI overlay prevented budget leakage
  - Automated compliance checks reduced manual auditing by 50%
  - Real-time dashboards improved accountability and transparency
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### Page 7 — Expected Impact

#### Governments gain:

- **Transparency:** Real-time visibility into spending and suppliers
- **Accountability:** Audit-ready reports with evidence trails
- **Budget Discipline:** Predictive analytics for overruns and anomalies
- **Fraud Prevention:** Ghost suppliers, collusion, and invoice fraud detection

#### Metrics:

Metric	Expected Improvement
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Irregular expenditure	↓ 60–70%
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Audit cycle time	↓ 50%
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Risk alerts generated	Real-time
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### Page 8 — Next Steps & Conclusion

#### Implementation Roadmap:

- 4–6 weeks deployment: compliance automation → full Procure-to-Pay intelligence
- Integration with IFMIS & treasury systems

#### Policy Implications:

- Supports governance, accountability, and efficient public spending
- Strengthens fiscal transparency and citizen trust

**Call to Action:**

- [Download the whitepaper PDF](#)
- [Request a demo for your government unit](#)

**Footer:**

- © 2025 Public Finance AI Lab
- Compliance Badges: [PFM Act](#) • [PPDA Act](#) • [IFRS](#) • [ISO 27001](#)